



**REPORT  
SUBSURFACE INVESTIGATION  
RIVER ROAD  
EDGEWATER, NEW JERSEY  
PMK GROUP # 0200054**

September 29, 2000

Bergen County Department of Public Works  
Administration Building Court Plaza South – Room 201E  
21 Main Street  
Hackensack, New Jersey 07601-7021

ATTN: MR. ANTHONY SCOLPINO

**REPORT  
SUBSURFACE INVESTIGATION  
RIVER ROAD  
EDGEWATER, NEW JERSEY  
PMK GROUP # 0200054**

**INTRODUCTION**

This report presents the results of a subsurface investigation performed by the PMK Group along River Road in Edgewater, New Jersey. The site is depicted on the Site Location Map, Plate 1.

**PROJECT BACKGROUND**

The current alignment of River Road traverses an abandoned chemical facility. The structures within the facility were removed, however the pile supported foundations were left in place. In order to construct the new roadway, fill on the order of 4 to 5 feet in thickness was installed within some areas. It is our understanding that a 500 foot section of River Road has experienced varying degrees of subsidence and/or distress. Further, there is also a potential that subsurface utilities have been compromised as a result of this subsidence.

**PURPOSE AND SCOPE OF WORK**

The purpose of our services was to:

1. Explore the subsurface soil and groundwater conditions throughout the existing roadway;
2. Estimate the geotechnical engineering properties of the encountered subsurface materials;
3. Provide recommendations for remedial action along the existing road alignment necessary to correct the roadway distress.

To accomplish these purposes, a subsurface exploration program consisting of 38 supervised test borings was performed throughout the road, as well as the right-of-way area. The borings were advanced using truck mounted drilling equipment and extended to depths ranging from 32 to 72

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feet below the existing surface grades. All boring locations are shown relative to the existing site features on the Boring Location Plan, Plate 2A.

All field work was performed under the direct technical observation of a geotechnical representative from the PMK Group. Our representative located the explorations in the field, maintained a continuous log of the explorations as the work proceeded, and supervised the soil sampling operations so as to develop the required subsurface information.

Soil samples, suitable for identification purposes, were also extracted from the borings at closely spaced intervals in accordance with the procedures of the Standard Penetration Test. For this test, a standard split barrel sampler measuring 2 inches in outside diameter, 1 3/8 inches inside diameter is advanced into the soil using a 140 pound weight falling 30 inches. The number of blows required to advance the sampler a distance of one foot is recorded and designated as the Standard Penetration Resistance. The Standard Penetration Resistance values, as well as detailed descriptions of the encountered materials, are presented on the individual Logs of Borings, Plates 3A through 3SS. The correlation between soil conditions and the standard penetration test is presented below in Table I-1. The soil samples were visually classified in accordance with the procedures of the Unified Soil Classification System described on Plate 4. Additionally, the generalized subsurface conditions are depicted on Plate 2B, Soil Profiles.

Table I-1 Correlation Between Soil Conditions and Standard Penetration Test

Soil Type	Designation	Blows/Ft
Non-cohesive Soils: Sand/Gravel Soils	Loose	0-10
	Medium Dense	11-30
	Dense	31-50
	Very Dense	51+
Cohesive Soils: Clays/Silts	Very Soft	0-2
	Soft	3-4
	Medium	5-8
	Stiff	8-16
	Very Stiff	16-32
	Hard	33+

All soil samples were brought to our office where they were further examined in our soil mechanics laboratory and subjected to appropriate laboratory testing. The laboratory program included moisture content determinations, and Atterberg Limits. The results of the laboratory tests are presented on Plates 5A through 5C, Atterberg Limits.

The results of the subsurface exploration program and laboratory analysis have provided the basis for our engineering analysis and design recommendations. The conclusions and

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recommendations presented herein are subject to the limitations attached as an Appendix to this report.

### **SITE CONDITIONS**

**Surface Features:** The area is currently a paved 4 lane road. Areas of settlement on the order of 12 to 18 inches were observed within the roadway, as well as the right of way area along the east side of the road.

**Subsurface Conditions:** The explorations performed for this study indicate that the site is underlain by soils which are variable in nature. In general, the site was found to be blanketed by either a surficial layer of topsoil on the order of 4 to 6 inches in thickness or bituminous concrete on the order of 6 to 18 inches in thickness. It should be noted that several concrete slabs and/or foundations, on the order of 1 to 10 feet in thickness, were encountered within the upper fill soils in a majority of the explorations. The soil types encountered at the subject site can be described as follows:

**Fill:** These soils were encountered immediately below the surficial soils and can be described as loose to very dense silty sand and gravel soils with varying percentages of brick, wood, concrete and coal tar. This layer extended to depths ranging from 8 to 20 feet below the existing surface grades.

**Organic Silt:** This layer was encountered below the fill soils and can be described as soft to medium stiff organic silt. This layer extends to depths ranging from 15 to 40 feet.

**Silty Sand/Sandy Silt:** This layer was encountered below the organic silt and can be described as loose to very dense silty sand and/or medium stiff to very stiff sandy silt soils. This layer extended to the maximum depth explored, 72 feet below the existing surface grades.

Groundwater was encountered in all of the explorations at depths ranging from 5 to 15 feet below the existing surface grades. It should be anticipated that the groundwater level at the site may fluctuate in response to seasonal variations in the rainfall, temperature, surface runoff, and other factors at the time the explorations were performed.

### **CONCLUSIONS AND RECOMMENDATIONS**

Based on our visual observations of the existing site grades in the area bounded by borings B-215 to B-231, as well as the area by borings B-209 and B-214, settlement on the order of up to 18 inches has occurred at the site. The 4 to 5 feet of additional fill required to obtain the proposed road grades has imposed additional load on the compressible soil layers, and thus initiated the settlement. Based upon our findings as well as additional information obtained from other sources, the amount of settlement observed within these areas is likely near or at the end of the total estimated settlement expected, due to the installed fill soils.

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Initially, we recommend a monitoring program throughout the site in order to determine if any additional settlement will occur. We recommend installing approximately 30 survey points (pk nails) throughout the area. A benchmark should be established on the adjacent pile supported structure. The monitoring program should be performed for approximately 3 months or until the settlement is determined to be substantially complete.

Upon establishing that the settlement is complete, the upper 4 feet of fill from within the affected areas, and 20 feet beyond, should be overexcavated. The exposed soils should be proofrolled to a firm and unyielding consistency with a 10 ton smooth drum vibrator roller. Any areas determined to be loose should be selectively overexcavated and replaced with controlled compacted fill. It should be noted that all utilities must be located to avoid damage during the proofrolling operations. Additionally, it may be prudent to inspect and replace any utilities which may have experienced significant settlement

Fill, consisting of lightweight material, i.e. Solite, Elasticer, should be installed in lifts, each on the order of 8 to 12 inches in loose thickness and uniformly compacted to at least 95% of the maximum dry density as determined by ASTM D-1557 Test Procedures. This material would have an in place compactive weight of 45 pounds per square. We recommend performing the remedial work in sections in order to minimize the disturbance of traffic in the area.

Please contact us if you have any questions concerning the information contained in this report.

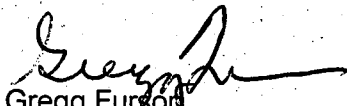
The following plates and appendix are attached and complete this report:

- Plate 1 - Site Location Map
- Plate 2A - Boring Location Plan
- Plate 2B - Soil Profiles
- Plate 3A - through 3SS - Logs of Borings
- Plate 4 - Unified Soil Classification System
- Plate 5A through 5C - Atterberg Limits
- Appendix - Limitations

Respectfully submitted,  
PMK Group



Gerald J. Perricone, P.E.  
Vice President  
GJP/GF/bm/gth/report/11452r8



Gregg Furson  
Project Engineer



PLATE #1-SITE LOCATION MAP PMK#0200054

PLATE: 3A

# LOG OF BORING

 Boring #: B-201  
 Project #: 0200054  
 Date Completed: 6/27/00  
 Ground Surface El:  
 Depth to Ground Water: 5'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		Fill: Fine to coarse sand, some fine to coarse gravel, little silt (moist, medium dense)	
					-			
					-			
					-		Concrete slab 4' to 5'	
					-5		Fill: Brown fine to coarse sand, little fine gravel, little silt, brick (wet, loose) @ 5'	
					-			
					-			
					-			
					-10			
					-			
					-			
					-15	OH	Gray organic silt (wet, soft)	
					-			
					-			
					-20			
					-			
					-			
					-25			
					-			
					-			
					-30			
					-			
					-			
					-35	SM	Fine sand, trace silt (wet, loose)	
					-			
					-			
					-			

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**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE: 3B

# LOG OF BORING




 Boring #: B-201  
 Project #: 0200054  
 Date Completed: 6/27/00  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-40		- grading to little silt (medium dense) @ 40'	
					-			
					-			
					-			
					-45	ML	Brown silt, little fine sand (wet, medium stiff)	
					-			
					-			
					-			
					-			
					-50			
					-			
					-			
					-55			
					-			
					-			
					-60			
					-			
					-			
					-65			
					-			
					-			
					-70			
					-			
					-			
					-75			
					-			
					-			
					-80			
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**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop.

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

 Boring #: B-202  
 Project #: 0200054  
 Date Completed: 6/27/00  
 Ground Surface El:  
 Depth to Ground Water: 6'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		6" Asphalt, 6" Gravel	
					-		1' to 5' concrete	
					-			
					-5			
					-		Fill: Gray to black fine to coarse sand, little silt (loose, wet)	
					-			
5					-			
3					-			
1					-10			
					-	OH	Gray organic silt (very soft, wet)	
					-			
					-15			
1					-			
					-			
					-20			
1					-			
					-			
					-25			
3					-			
					-			
					-30			
2					-			
					-			
					-	SM	Red brown fine to medium sand, little silt (loose, wet)	
					-35			
9					-			
					-			
					-			
					-			

1 of 2

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3C

# LOG OF BORING

 Boring #: B-202  
 Project #: 0200054  
 Date Completed: 6/15/00  
 Ground Surface El:  
 Depth to Ground Water: 6'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-40		- grading to trace silt (medium dense) @ 40'	
					-45		- grading to (loose) @ 46'	
					-50		Boring B-202 completed @ 47' on 6/15/00	
					-55			
					-60			
					-65			
					-70			
					-75			
					-80			

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**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3C

PLATE : 3D

# LOG OF BORING

Boring #: B-203  
 Project #: 0200054  
 Date Completed: 6/21/00  
 Ground Surface El:  
 Depth to Ground Water: 5'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-40	SM	Brown fine to coarse sand, some fine gravel, trace silt (wet, dense)	
	34				-45		Boring B-203 completed @ 42' on 6/21/00	
					-50			
					-55			
					-60			
					-65			
					-70			
					-75			
					-80			

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**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▢ Undisturbed Tube Sample
- ▣ Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3D

# LOG OF BORING

Boring #: B-204  
 Project #: 0200054  
 Date Completed: 6/25/00  
 Ground Surface El:  
 Depth to Ground Water: 5'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		1' Asphalt	
					-			
	33				-		Fill: Black fine to coarse sand, some fine to gravel, little silt (moist, dense)	
					-			
	18				-		- grading to (medium dense) @ 4'	
					-5		- grading to (wet) @ 5'	
	100+				-		- grading to (very dense) @ 6'	
					-		Concrete from 6'-3" to 7'-6"	
					-			
					-	OH	Gray organic silt (wet, very soft)	
	WOR				-10			
					-			
	1				-			
					-			
					-15			
	1				-			
					-			
					-			
					-20			
	1				-			
					-			
					-			
					-25			
	1				-			
					-			
					-			
					-30			
	WOR				-			
					-			
					-			
					-35			
	WOR				-			
					-			
					-			
					-			

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**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

## LEGEND:

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3E

# LOG OF BORING

Boring #: B-204  
 Project #: 0200054  
 Date Completed: 6/25/00  
 Ground Surface El:  
 Depth to Ground Water: 5'




S A M P L E S	S T A N D A R D	P E N E T R A T I O N	R E S I S T A N C E	C A S I N G B L O W S	D E P T H F T	S Y M B O L	DESCRIPTION	% M O I S T U R E
		27			-40		Brown fine to coarse sand, some silt (wet, medium dense)	
					-45		Boring B-204 completed @ 42' on 6/23/00	
					-50			
					-55			
					-60			
					-65			
					-70			
					-75			
					-80			

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**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3E

# LOG OF BORING




Boring #: B-205  
 Project #: 0200054  
 Date Completed: 6/27/00  
 Ground Surface El:  
 Depth to Ground Water: 6'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOW COUNT	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		1' Asphalt	
			-			
51			-		Fill: Black fine to coarse sand, little fine gravel, little silt (moist, dense)	
			-			
18			-5		- grading to (medium dense) @ 5'	
			-		- grading to (wet, loose) @ 6'	
3			-			
2			-10		- grading to coal tar @ 10'	
2			-			
			-			
			-15			
2			-	OH	Gray organic silt (wet, soft)	
			-			
			-			
			-20			
2			-			
			-			
			-25			
3			-			
			-			
			-			
			-30			
3			-			
			-			
			-35			
17			-	ML	Brown silt, little fine sand (wet, very stiff)	
			-			
			-		Boring B-205 completed @ 37' on 6/27/00	

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING




 Boring #: B-206  
 Project #: 0200054  
 Date Completed:  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD PENETRATION	CASING BLOWNS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		OMITTED	
			-1			
			-2			
			-3			
			-4			
			-5			
			-6			
			-7			
			-8			
			-9			
			-10			
			-11			
			-12			
			-13			
			-14			
			-15			
			-16			
			-17			
			-18			
			-19			
			-20			
			-21			
			-22			
			-23			
			-24			
			-25			
			-26			
			-27			
			-28			
			-29			
			-30			
			-31			
			-32			
			-33			
			-34			
			-35			
			-36			
			-37			
			-38			
			-39			
			-40			

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3H



# LOG OF BORING

 Boring #: B-209  
 Project #: 0200054  
 Date Completed: 6/22/00  
 Ground Surface El:  
 Depth to Ground Water: 10'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		12" Asphalt	
					-		Concrete from 1' to 10'	
					-			
					-5			
					-			
					-			
					-10			
	■				-	OH	Gray organic silt (wet, soft)	
					-			
					-15			
	■				-			
					-20			
	■				-			
					-25			
	■				-			
					-30			
	■				-	SM	Brown fine to medium sand, some silt (wet, loose)	
					-			
					-35		- grading to red brown fine sand and silt (medium dense) @ 35'	
	■				-			
					-		Boring B-209 completed @ 37' on 6/22/00	
					-40			
					-			

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▨ Undisturbed Tube Sample
- ▩ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

 Boring #: B-210  
 Project #: 0200054  
 Date Completed: 6/28/00  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOW S	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		1' Asphalt	
■	32		-		Fill: Black fine to coarse sand, some fine to coarse gravel, little silt (moist, dense)	
■	50+		-5		- concrete obstruction 6' to 7'	
■	WOR		-	OH	Gray organic silt (wet, very soft)	
■	WOR		-10			
			-			
■	1		-15			
			-			
			-20			
			-			
■	WOR		-25			
			-			
■	WOR		-30			
			-			
■	WOR		-35			
			-			
■	17		-40	SM	Brown fine to coarse sand, little silt (wet, medium dense)	
			-			
			-		Boring B-210 completed @ 42' on 6/28/00	

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

 Split Spoon Sample  
 Undisturbed Tube Sample  
 Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

☒ Hollow Stem Auger  
☐ Mud Rotary  
☐ Air Rotary

# LOG OF BORING

 Boring #: B-211  
 Project #: 0200054  
 Date Completed: 6/23/00  
 Ground Surface El:  
 Depth to Ground Water: 12'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		6" Topsoil	
■	5		-		Fill: Brown fine to coarse sand, little fine gravel, little silt	
■	100+		-		- grading to pieces of brick (very dense) @ 2'	
■	100+		-		- 4' 6" - 11' concrete obstruction	
			-5			
			-			
			-			
			-10			
			-			
■	1		-	OH	Gray organic silt with fibers (wet, soft)	69
			-15			
■	2		-			
			-			
			-20			
■	3		-			
			-			
			-25			
■	2		-			
			-			
			-30			
	WOH		-			
			-35			
■	4		-			
			-			
			-40	SM	Gray fine to medium sand, little silt (wet, loose)	
■	9		-			
			-			
			-		Boring B-211 completed @ 42' on 6/23/00	

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

Boring #: B-212

Project #: 0200054

Date Completed: 6/16/00

Ground Surface El:

Depth to Ground Water: 8'


[illegible]

# PMK Group

\* Blows per foot using 140# hammer with 30 inch drop.

**\*\* Blows per foot using 300# hammer with 30 inch drop**

**LEGEND:**

- 
 Split Spoon Sample  
 Undisturbed Tube Sample  
 Rock Core Sample

Client: **Bergen County DPW**  
Project: **River Road**  
Location: **Edgewater, NJ**

Project Manager: GF  
Field Engineer: WS  
Driller: HP

- ☒ Hollow Stem Auger  
☐ Mud Rotary  
☐ Air Rotary

PLATE : 3M

# LOG OF BORING

Boring #: B-212  
 Project #: 0200054  
 Date Completed: 6/16/00  
 Ground Surface El:  
 Depth to Ground Water: 8'




SAMPLES	STANDARD PENETRATION	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
	8		-40	ML	Gray brown silt, some fine to medium sand (wet, stiff)	
	68		-45	SM	Brown fine to coarse sand, some silt (wet, very dense)	
					Boring B-212 completed @ 47' on 6/16/00	
			-50			
			-55			
			-60			
			-65			
			-70			
			-75			
			-80			

2 of 2

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3M

# LOG OF BORING

 Boring #: B-213  
 Project #: 0200054  
 Date Completed: 6/22/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
	20		-0		Fill: Fine to coarse sand, some silt (moist, medium dense)	
	50		-		- grading to brick cinder (very dense) @ 21'	
	50		-5		- concrete construction 4' 6" - 8'	
	WOH		-10	OH	Gray organic silt (wet, soft)	
	0		-15			
	WOH		-20			
	1		-25			
	WOH		-30			
	17		-35	SM	Gray fine to coarse sand, some silt (wet, medium dense)	
			-40		Boring B-213 completed @ 37' on 6/21/00	

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

 Boring #: B-214  
 Project #: 0200054  
 Date Completed: 6/22/00  
 Ground Surface El:  
 Depth to Ground Water: 4'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		10" Asphalt	
■	156				-		Fill: Black fine to coarse sand, little silt (moist, very dense)	
■	167				-			
■	100				-5		- grading to little fine gravel (wet) @ 4'	
■	3				-			
■	2				-		- grading to (loose) @ 7'	
■	3				-10			
■					-			
■					-			
■	WOH				-15	OH	Black organic silt (wet, soft)	
■					-			
■					-			
■	2				-20			
■					-			
■	WOH				-25			
■					-			
■	WOH				-30			
■					-			
■					-			
■	9				-35	ML	Brown silt, little fine sand (wet, stiff)	
■					-			
■					-			
■	11				-40			
■					-			
Boring B-214 completed @ 42' on 6/23/00								

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE: 30

# LOG OF BORING

 Boring #: B-215  
 Project #: 0200054  
 Date Completed: 6/28/00  
 Ground Surface El:  
 Depth to Ground Water: 5'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		1' Asphalt	
■	50+				-		Fill: Gray fine to coarse sand, little fine gravel, little silt (moist, dense)	
■	11				-5		- grading to (wet, medium dense) @ 5'	
■	100+				-			
■	4				-	OH	Black organic silt (wet, medium stiff)	
■	2				-10		- grading to (soft) @ 11'	
					-			
■	1				-15			
					-			
■	WOH				-20			
					-			
■	WOH				-25			
					-			
■	7				-30			
					-			
■	10				-35	ML	Gray silt, little fine to coarse sand (wet, stiff)	
					-			
					-		Boring B-215 completed @ 37' on 6/28/00	
					-40			
					-			
					-			

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**



- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3P

# LOG OF BORING

 Boring #: B-216  
 Project #: 0200054  
 Date Completed:  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		OMITTED	
			-			
			-			
			-			
			-			
			-5			
			-			
			-			
			-			
			-			
			-10			
			-			
			-			
			-			
			-15			
			-			
			-			
			-			
			-20			
			-			
			-			
			-			
			-25			
			-			
			-			
			-			
			-30			
			-			
			-			
			-35			
			-			
			-			
			-			

<b>PMK Group</b>		* Blows per foot using 140# hammer with 30 inch drop. ** Blows per foot using 300# hammer with 30 inch drop	
<b>LEGEND:</b> ■ Split Spoon Sample  Undisturbed Tube Sample  Rock Core Sample		Project Manager: GF Field Engineer: WS Driller: HP	
Client: <b>Bergen County DPW</b> Project: <b>River Road</b> Location: <b>Edgewater, NJ</b>		<input checked="" type="checkbox"/> Hollow Stem Auger <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Air Rotary	
PLATE : 3Q			

# LOG OF BORING

 Boring #: B-217  
 Project #: 0200054  
 Date Completed: 6/19/00  
 Ground Surface El:  
 Depth to Ground Water: 6'




SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		2' Asphalt	
			-			
			-			
54			-		Fill: Black fine to coarse sand, little fine gravel sand, some silt, brick, concrete (moist, dense)	
			-5		- grading to (medium dense) @ 5'	
17			-		- grading to (wet) @ 6'	
			-		- grading to (dense) @ 7'	
48			-			
			-		- grading to (medium dense) @ 9'	
24			-10			
			-		- grading to (dense) @ 11'	
39			-			
			-			
			-15	OH	Gray organic silt (wet, very soft)	
1			-			
			-			
			-			
			-20			
2			-			
			-			
			-25			
3			-			
			-			
			-			
			-30			
2			-			
			-			
			-35			
1			-			
			-			
			-			
			-			

1 of 2

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3R

# LOG OF BORING

Boring #: B-217  
 Project #: 0200054  
 Date Completed: 6/19/00  
 Ground Surface El:  
 Depth to Ground Water:




S A M P L E S	S T A N D A R D	P E N E T R A T I O N	R E S I S T A N C E	C A S I N G B L O W S	D E P T H F T	S Y M B O L	DESCRIPTION	% M O I S T U R E
		88			-40	SM	Brown fine to coarse sand, little silt (wet, loose)	
		13			-45		- grading to fine to medium sand, trace silt (medium dense) @ 46'	
		10			-50			
		97			-55		- grading to some fine gravel (very dense) @ 55'	
		40			-60		- grading to fine to coarse sand, little silt (dense) @ 60'	
		100/1"			-64		- auger refusal @ 64'	
					-65		Boring B-217 completed @ 64' on 6/19/00	
					-70			
					-75			
					-80			

2 of 2

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3R

# LOG OF BORING

 Boring #: B-218  
 Project #: 0200054  
 Date Completed: 6/21/00  
 Ground Surface El:  
 Depth to Ground Water: 6'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		6" Topsoil	
■	17		-		Fill: Brown fine to coarse sand, some fine gravel, little silt (moist, medium dense)	
■	20		-			
■	20		-5		- grading to (wet) @ 6'	
■	28		-			
■	100/3"		-			
■	100/4"		-10		- grading to pieces of wood, brick @ 10'	
			-		- wood obstruction 11' - 13'	
			-	OH	Black organic silt (wet, soft)	
■	3		-15			
			-			
■	5		-20		- grading to (medium stiff) @ 21'	
			-			
■	2		-25		- grading to (soft) @ 26'	
			-			
■	4		-30			
			-			
■	1		-35			
			-			
■	2		-40	SM	Brown fine to coarse sand, little silt (wet, loose)	
			-			
			-		Boring B-218 completed @ 42' on 6/21/00	

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary


PLATE : 3S



# LOG OF BORING

Boring #: B-220  
Project #: 0200054  
Date Completed:  
Ground Surface El:  
Depth to Ground Water:




SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		OMITTED	
			-			
			-			
			-			
			-5			
			-			
			-			
			-			
			-10			
			-			
			-			
			-15			
			-			
			-			
			-20			
			-			
			-			
			-25			
			-			
			-			
			-30			
			-			
			-			
			-35			
			-			
			-			
			-			



**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
Project: **River Road**  
Location: **Edgewater, NJ**

Project Manager: GF  
Field Engineer: WS  
Driller: HP

☒ Hollow Stem Auger  
☐ Mud Rotary  
☐ Air Rotary

PLATE: 3U

# LOG OF BORING

Boring #: B-223  
 Project #: 0200054  
 Date Completed: 6/20/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		6" Topsoil	
■	19				-		Fill: Brown fine to coarse sand, some silt, pieces of brick (moist, medium dense)	
■	18				-		- grading to little fine gravel, little silt @ 2'	
■	70				-5		- grading to (very dense) @ 5'	
■	48				-		- grading to (dense) @ 7'	
■	15				-		- grading to (wet, medium dense) @ 8'	
■	6				-10		- grading to (loose) @ 11'	
					-			
					-15		Black organic silt (wet, very soft)	
■	1				-			
					-			
					-20			
■	2				-			
					-			
					-25			
■	3				-			
					-			
					-30			
■	1				-			
					-			
					-35	SM	Gray fine to coarse sand, some silt (wet, loose)	
■	4				-			
■	4				-			
					-40			
■	13				-	ML	Brown silt (wet, stiff)	
					-			
					-		Boring B-223 completed @ 42' on 6/20/00	

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▨ Undisturbed Tube Sample
- ▩ Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3X

# LOG OF BORING

 Boring #: B-224  
 Project #: 0200054  
 Date Completed: 6/22/00  
 Ground Surface El:  
 Depth to Ground Water: 5'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		6" Asphalt	
					-		Fill: Black fine to coarse gravel, some fine to coarse sand, little silt (moist, dense)	
■	16				-		- grading to pieces of brick @ 3'	
■	17				-			
■	17				-5		- grading to some coal tar, little fine gravel (wet) @ 5'	
■	16				-			
■	10				-10			
■	13				-			
■	1				-15	OH	Gray organic silt (wet, soft)	
■	2				-20			
■	7				-25	SM	Gray fine to medium sand, trace silt (wet, loose)	
■	11				-30	ML	Gray brown silt, trace fine sand (wet, stiff)	
					-		Boring B-224 completed @ 32' on 6/22/00	
					-35			
					-40			

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE: 3Y



**CONSULTING & ENVIRONMENTAL ENGINEERS**

Boring #: B-225  
Project #: 0200054  
Date Completed: 6/27/00  
Ground Surface El:  
Depth to Ground Water: 8'

<b>PMK Group</b>		* Blows per foot using 140# hammer with 30 inch drop. ** Blows per foot using 300# hammer with 30 inch drop
<b>LEGEND:</b> ■ Split Spoon Sample ▢ Undisturbed Tube Sample ▤ Rock Core Sample Client: <b>Bergen County DPW</b> Project: <b>River Road</b> Location: <b>Edgewater, NJ</b>		Project Manager: GF Field Engineer: WS Driller: HP  <input checked="" type="checkbox"/> Hollow Stem Auger <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Air Rotary
		PLATE : 3Z

# LOG OF BORING

Boring #: B-225  
 Project #: 0200054  
 Date Completed: 6/27/00  
 Ground Surface El:  
 Depth to Ground Water: 8'




S A M P L E S	S T A N D A R D	P E N E T R A T I O N	R E S I S T A N C E	C A S I N G B L O W S	D E P T H F T	S Y M B O L	DESCRIPTION	% M O I S T U R E
		31			-40	SM	Gray fine to coarse sand, little silt (wet, dense)	
		22			-45		- grading to (medium dense) @ 46'	
		17			-50			
		10			-55			
		38			-60		- grading to some fine gravel (dense) @ 60'	
		90			-65		- 63' to 64'-6" boulder	
		101			-70		- grading to (very dense) @ 66'	
					-75		Boring B-225 completed @ 72' on 6/27/00	
					-80			

2 of 2

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3Z

# LOG OF BORING




 Boring #: B-226  
 Project #: 0200054  
 Date Completed: 6/26/00  
 Ground Surface El:  
 Depth to Ground Water: 7

SAMPLES	STANDARD PENETRATION	RESISTANCE	CASING BLOW S	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
				-0		1' Asphalt	
				-			
				-		- concrete obstruction to 4'	
				-5		Fill: Black fine to coarse sand, some fine gravel, little silt (moist, medium dense)	
	19			-		- grading to (wet, very dense) @ 7'	
	100+			-			
	61			-			
	50/0"			-10			
				-			
				-			
				-			
	11			-15		Black coal tar, some fine to coarse sand (wet, medium dense)	
				-			
				-			
				-			
				-20	OH	Gray organic silt (wet, soft)	
	3			-			
				-			
				-			
				-25		- grading to (medium stiff) @ 26'	
	4			-			
				-			
				-30		- grading to (soft) @ 31'	
	3			-			
				-			
				-35			
	2			-			
				-			
				-40	SM	Gray fine to coarse sand, little silt (wet, medium dense)	
	17			-			
				-			
				-		Boring B-226 completed @ 42' on 6/26/00	

## PMK Group

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

### LEGEND:

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

 Boring #: B-227  
 Project #: 0200054  
 Date Completed: 6/19/00  
 Ground Surface El:  
 Depth to Ground Water: 8'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		18" Asphalt, 6" Gravel	
					-			
					-			
33					-		Fill: Black fine to coarse sand, little fine to gravel, little silt (moist, dense)  - grading to (mediumd dense) @ 5'  - grading to (dense) @ 7' - grading to (wet) @ 8' - grading to (medium dense) @ 9'  - grading to (loose) @ 11'	
22					-5			
					-			
45					-			
					-			
13					-			
					-10			
					-			
					-			
8					-15			
					-			
					-			
WOH					-20	OH	Gray organic silt (wet, very soft)	
					-			
					-			
					-25			
WOH					-			
					-			
					-			
WOH					-30			89
					-			
					-			
WOH					-35			
					-			
					-			

1 of 2

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger.
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3BB

# LOG OF BORING

Boring #: B-227  
 Project #: 0200054  
 Date Completed: 6/19/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
■	5		-40	ML	Gray silt, little fine sand, some silt (wet, medium stiff)	
■	16		-45		- grading to trace fine sand (very stiff)	
			-50		Boring B-227 completed @ 47' on 6/19/00	
			-55			
			-60			
			-65			
			-70			
			-75			
			-80			

2 of 2

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**




Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE: 3BB

# LOG OF BORING

 Boring #: B-228  
 Project #: 0200054  
 Date Completed: 6/20/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		1' Asphalt	
■	15		-		Fill: Black fine to coarse gravel, some fine to coarse sand, little silt (moist, medium dense)	
■	10		-			
■	52		-5		- grading to some coal (dense) @ 5'	
■	82		-			
■	5		-10		- grading to (wet, very dense) @ 8'	
			-		- grading to (loose) @ 10'	
			-15			
■	2		-		Gray organic silt (wet, very soft)	
			-			
■	1		-20			
			-			
			-25			
■	0		-			
			-			
■	1		-30			
			-			
■	1		-35			
			-			
■	14		-40	ML	Gray silt, little fine sand (wet, stiff)	
			-			
			-		Boring B-228 completed @ 42' on 6/20/00	
<b>PMK Group</b> <b>LEGEND:</b>  Split Spoon Sample  Undisturbed Tube Sample  Rock Core Sample Client: <b>Bergen County DPW</b> Project: <b>River Road</b> Location: <b>Edgewater, NJ</b>					* Blows per foot using 140# hammer with 30 inch drop. ** Blows per foot using 300# hammer with 30 inch drop	Project Manager: GF Field Engineer: WS Driller: HP <input checked="" type="checkbox"/> Hollow Stem Auger <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Air Rotary
						PLATE : 3CC

# LOG OF BORING

 Boring #: B-229  
 Project #: 0200054  
 Date Completed: 6/22/00  
 Ground Surface El:  
 Depth to Ground Water: 8'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		10" Asphalt	
					-		Fill: Black fine to coarse sand, little fine gravel, little silt (moist, dense)	
38					-		2' 6" to 3' 6" concrete slab	
68					-		Fill: Black fine to coarse sand, some fine to coarse gravel, little silt	
100/0"					-5			
					-		- grading to (wet, dense) @ 8'	
46					-			
9					-10		- grading to (loose) @ 10'	
21					-		- grading to coal tar (medium dense) @ 12'	
					-			
2					-15	OH	Gray organic silt (wet, soft)	
					-			
					-			
3					-20			
					-			
					-			
4					-25		- grading to (medium stiff) @ 26'	
					-			
					-			
12					-30	ML	Brown silt, little fine sand (wet, stiff)	
					-			
					-			
					-			
14					-35			
					-			
					-			
					-			
					-			

1 of 2

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3DD

# LOG OF BORING

 Boring #: B-229  
 Project #: 0200054  
 Date Completed: 6/22/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
■	17				-40		- grading to (very stiff) @ 41'	
					-			
					-			
					-			
					-45		- grading to (stiff) @ 46'	
■	11				-			
					-			
					-			
					-			
■	12				-50	SM	Red brown fine to coarse sand, trace silt (wet, medium dense)	
■	12				-			
					-			
■	5				-55		- grading to (loose) @ 56'	
					-			
					-			
■	69				-60		- grading to some fine gravel (very dense) @ 61'	
					-			
					-			
■	184				-65			
					-			
					-			
■	100+				-70		- grading to little silt @ 69'	
					-			
					-			
					-75			
					-			
					-80			
Boring B-229 completed @ 70' -6" on 6/22/00								
2 of 2								

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▢ Undisturbed Tube Sample
- ▣ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☒ Mud Rotary
- ☐ Air Rotary

PLATE : 3DD

# LOG OF BORING




 Boring #: B-230  
 Project #: 0200054  
 Date Completed: 6/29/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		1' Asphalt	
			-		Fill: Brown fine to coarse sand, little fine gravel, little silt (moist, dense)	
			-5		4' - 7' concrete obstruction	
			-		- grading to (wet, loose) @ 8'	
	54		-10			
			-			
	6		-15		Black coal tar product (wet, loose)	
	7		-			
			-20			
			-			
	11		-25	OH	Gray organic silt (wet, soft)	
			-			
	3		-30		- grading to (medium stiff) @ 31'	
			-			
	4		-35			
			-			
	7		-40	SM	Gray fine to coarse sand, little silt (wet, medium dense)	
			-			
	14		-			
			-		Boring B-230 completed @ 42' on 6/29/00	

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary






PLATE : 3GG

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		1' Asphalt	
		100+			-		Fill: Brown fine to coarse sand, little fine gravel, little silt (dry, dense)	
		12			-5		- grading to medium dense @ 4'	
		40			-		- grading to (wet, dense) @ 5'	
		100+			-		- obstruction @ 7' 2" to 8' 6"	
		36			-10		Black coal tar product	
		77			-			
		12			-15		Black coal tar (medium dense)	
					-			
		1			-20	OH	Gray organic silt (wet, soft)	
					-			
		1			-25			
					-			
		3			-30	SM	Gray fine sand, little silt (wet, loose)	
					-			
		26			-35	ML	Brown silt, little fine sand (wet, very stiff)	
					-			
					-		Boring B-233 completed @ 37' on 6/29/00	
					-40			
					-			

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: Bergen County DPW  
 Project: River Road  
 Location: Edgewater, NJ

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary




PLATE : 3HH

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		1' Asphalt	
			-		Fill: Black fine to coarse sand, some fine to coarse sand, little silt, brick (moist, dense)	
			-		- grading to little fine gravel @ 2'	
39			-			
56			-5			
			-		- 6'- 8' concrete obstruction	
100+			-			
37			-			
			-10			
35			-			
			-			
			-15		- grading to coal tar @ 15'	
134			-			
			-			
			-20	OH	Gray organic silt (wet, soft)	
2			-			
			-			
			-25			
3			-			
			-			
			-30		- grading to (stiff) @ 31'	
15			-			
			-			
			-35	SM	Brown fine to medium sand, some silt (wet, loose)	
7			-			
			-		Boring B-234 completed @ 37' on 6/26/00	
			-40			
			-			

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

 Boring #: B-235  
 Project #: 0200054  
 Date Completed: 6/20/00  
 Ground Surface El:  
 Depth to Ground Water: 8'

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWNS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
	13		-0		8' Asphalt w/gravel underlay	
■	50/0"		-		Fill: Black fine to coarse sand, little fine to coarse gravel, little silt, concrete (moist, medium dense)	
■	103		-			
■	100/0"		-5			
			-		- grading to (wet, medium dense) @ 8'	
■	16		-			
■	27		-10			
			-		- grading to coal @ 15'	
■	100/5"		-15			
			-			
			-20	OH	Gray organic silt (wet, very loose)	
■	2		-			
			-		- grading to some fine to coarse sand (medium stiff) @ 26'	
■	5		-25			
			-			
■	21		-30	SM	Brown fine to medium sand, trace silt (wet, medium dense)	
			-			
■	9		-35	ML	Brown silt (wet, stiff)	
			-			
■	4		-40	SM	Brown fine sand and silt (wet, loose)	
			-			
			-		Boring B-235 completed @ 42' on 6/20/00	

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3JJ

# LOG OF BORING

 Boring #: B-236  
 Project #: 0200054  
 Date Completed:  
 Ground Surface El:  
 Depth to Ground Water:




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		OMITTED	
					-			
					-			
					-			
					-5			
					-			
					-			
					-			
					-			
					-10			
					-			
					-			
					-			
					-15			
					-			
					-			
					-			
					-20			
					-			
					-			
					-			
					-25			
					-			
					-			
					-			
					-30			
					-			
					-			
					-			
					-35			
					-			
					-			
					-40			
					-			
					-			

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3KK

SAMPLES	STANDARD PENETRATION RESISTANCE	CASING BLOWNS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
			-0		1' Asphalt	
			-		Fill: Black fine to coarse sand, some fine to coarse gravel, little silt (moist, dense)	
■	36		-			
■	24		-		- grading to (medium dense) @ 4'	
■	15		-5			
			-			
■	39		-		- grading to (dense) @ 9'	
■	17		-10			
			-		- grading to (medium dense) @ 11'	
			-			
			-15			
■	106		-			
			-			
			-20	OH	Organic silt (wet, medium stiff)	
■	5		-			
			-			
			-25			
■	3		-		- grading to (soft) @ 26'	
			-			
			-30	SM	Gray fine to medium sand, little silt (wet, medium dense)	
■	20		-			
			-			
			-35		Boring B-237 completed @ 32' on 6/26/00	
			-			
			-40			
			-			

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING




 Boring #: B-238  
 Project #: 0200054  
 Date Completed: 6/20/00  
 Ground Surface El:  
 Depth to Ground Water: 6'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
		50/0"			-0			
		50/0"			-			
		21			-5		Fill: Black fine to coarse sand, little fine gravel, trace silt (moist, medium dense) - grading to pieces of wood (wet, dense) @ 6' - obstruction from 8' to 9' - grading to some coal tar @ 10'	
		50			-			
					-10			
		52			-			
					-15			
		8			-	OH	Gray organic silt (wet, soft)	
					-20	SM	Brown fine to medium sand, trace silt (wet, loose)	
		2			-			
					-25		- grading to little silt (medium dense) @ 25'	
		13			-			
					-30		Gray silt (wet, very stiff)	
		21			-			
					-35			
		12			-		- grading to (stiff) @ 36'	
					-40			
		8			-			
					-		Boring B-238 completed @ 42' on 6/20/00	

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3MM



# LOG OF BORING

 Boring #: B-240  
 Project #: 0200054  
 Date Completed:  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		OMITTED	
					-			
					-			
					-			
					-5			
					-			
					-			
					-			
					-			
					-10			
					-			
					-			
					-			
					-15			
					-			
					-			
					-			
					-20			
					-			
					-			
					-			
					-25			
					-			
					-			
					-			
					-30			
					-			
					-			
					-			
					-35			
					-			
					-			
					-40			
					-			
					-			

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

 Split Spoon Sample  
 Undisturbed Tube Sample  
 Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

☒ Hollow Stem Auger  
☐ Mud Rotary  
☐ Air Rotary

PLATE : 300

# LOG OF BORING




 Boring #: B-241  
 Project #: 0200054  
 Date Completed: 6/21/00  
 Ground Surface El:  
 Depth to Ground Water: 16'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		8" Asphalt	
	50/0"				-		Fill: Black fine to coarse sand, little fine gravel, concrete, little silt (moist, medium dense)  - obstruction (wood) @ 8-10'  - grading to pieces of brick @ 10'   - grading to (wet, loose) @ 16'	
	50/0"				-			
	28				-5			
	35				-			
	14				-10			
					-			
	5				-15			
					-			
					-			
					-			
	7				-20	SM	Gray fine to coarse sand, little silt (wet, loose)	
					-		- grading to (medium dense) @ 26'	
	14				-25			
					-			
					-			
	26				-30	ML	Gray silt, little fine sand (wet, very stiff)	
					-			
					-			
					-			
					-			
	22				-35			
					-			
					-			
					-40			

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop.

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

# LOG OF BORING

 Boring #: B-241  
 Project #: 0200054  
 Date Completed: 6/21/00  
 Ground Surface El:  
 Depth to Ground Water: 10'




SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-40		- grading to stiff @ 41'	
					-45	SM	Brown fine to coarse sand, little silt (wet, loose)	
					-50		Boring B-241 completed @ 47' on 6/21/00	
					-55			
					-60			
					-65			
					-70			
					-75			
					-80			

2 of 2

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

-  Split Spoon Sample
-  Undisturbed Tube Sample
-  Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3PP

# LOG OF BORING

 Boring #: B-242  
 Project #: 0200054  
 Date Completed: 6/28/00  
 Ground Surface El:  
 Depth to Ground Water: 6'

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		10" Asphalt	
■	38				-		Fill: Brown fine to coarse sand, some fine gravel, little silt, concrete (moist, dense)	
■	113				-		- grading to (very dense) @ 4'	
■	24				-5		- grading to (wet, medium dense) @ 6'	
■	100+				-		- pieces of wood @ 7'	
■	100+				-10			
■					-15	SM	Brown fine to medium sand, trace silt (wet, loose)	
■	3				-			
■	4				-20			
■	5				-25			
■	23				-30		- grading to (medium dense) @ 31'	
					-35		Boring B-242 completed @ 32' on 6/28/00	
					-40			

**PMK Group**

\* Blows per foot using 140# hammer with 30 inch drop.

\*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

 Split Spoon Sample  
 Undisturbed Tube Sample  
 Rock Core Sample

 Client: Bergen County DPW  
 Project: River Road  
 Location: Edgewater, NJ

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP

☒ Hollow Stem Auger  
☐ Mud Rotary  
☐ Air Rotary

PLATE : 3QQ

# LOG OF BORING

 Boring #: B-243  
 Project #: 0200054  
 Date Completed: 6/26/00  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		1' Asphalt	
■		19			-		Fill: Black fine to coarse sand, some fine to coarse gravel, little silt, brick (moist, medium dense)	
■		12			-			
■		19			-5			
					-			
■		29			-			
■		21			-10			
■		21			-			
■					-15	SM	Brown fine to medium sand, trace silt (wet, loose)	
■		5			-			
					-			
■		7			-20			
					-			
■		13			-25		- grading to (medium dense) @ 26'	
					-			
■		23			-30			
					-			
					-35		Boring B-243 completed @ 32' on 6/26/00	
					-			
					-40			
					-			

**PMK Group**

 \* Blows per foot using 140# hammer with 30 inch drop.  
 \*\* Blows per foot using 300# hammer with 30 inch drop

**LEGEND:**

- Split Spoon Sample
- ▬ Undisturbed Tube Sample
- ▬ Rock Core Sample

 Client: **Bergen County DPW**  
 Project: **River Road**  
 Location: **Edgewater, NJ**

 Project Manager: GF  
 Field Engineer: WS  
 Driller: HP




- ☒ Hollow Stem Auger
- ☐ Mud Rotary
- ☐ Air Rotary

PLATE : 3RR

# LOG OF BORING

 Boring #: B-244  
 Project #: 0200054  
 Date Completed:  
 Ground Surface El:  
 Depth to Ground Water:

SAMPLES	STANDARD	PENETRATION	RESISTANCE	CASING BLOWS	DEPTH FT	SYMBOL	DESCRIPTION	% MOISTURE
					-0		OMITTED	
					-1			
					-2			
					-3			
					-4			
					-5			
					-6			
					-7			
					-8			
					-9			
					-10			
					-11			
					-12			
					-13			
					-14			
					-15			
					-16			
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					-33			
					-34			
					-35			
					-36			
					-37			
					-38			
					-39			
					-40			
					-41			
					-42			
					-43			
					-44			
					-45			
					-46			
					-47			
					-48			
					-49			
					-50			

<b>PMK Group</b>		* Blows per foot using 140# hammer with 30 inch drop. ** Blows per foot using 300# hammer with 30 inch drop	
<b>LEGEND:</b>  Split Spoon Sample  Undisturbed Tube Sample  Rock Core Sample		Project Manager: GF Field Engineer: WS Driller: HP	
Client: <b>Bergen County DPW</b> Project: <b>River Road</b> Location: <b>Edgewater, NJ</b>		<input checked="" type="checkbox"/> Hollow Stem Auger <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Air Rotary	
PLATE : 3SS			

MAJOR DIVISIONS		
COARSE GRAINED SOILS          MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)
	MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)
FINE GRAINED SOILS          MORE THAN 50% OF MATERIAL IS <u>SMALLER</u> THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT <u>LESS</u> THAN 50
	SILTS AND CLAYS	LIQUID LIMIT <u>GREATER</u> THAN 50
HIGHLY ORGANIC SOILS		

LETTER SYMBOL
GW
GP
GM
GC
SW
SP
SM
SC
ML
CL
OL
MH
CH
OH
PT

TYPICAL DESCRIPTIONS
WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SILTY SANDS, SAND-SILT MIXTURES
CLAYEY SANDS, SAND-CLAY MIXTURES
INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDS CLAYS, SILTY CLAYS, LEAN CLAYS
ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

#### GRADATION\*

% FINER BY WEIGHT	
TRACE.....	0% TO 10%
LITTLE.....	10% TO 20%
SOME.....	20% TO 35%
AND.....	35% TO 50%

#### COMPACTNESS\* SAND AND/OR GRAVEL

RELATIVE DENSITY	
LOOSE.....	0% TO 40%
MEDIUM DENSE.....	40% TO 70%
DENSE.....	70% TO 90%
VERY DENSE.....	90% TO 100%

#### CONSISTENCY\* CLAY AND/OR SILT

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT	
VERY SOFT.....	LESS THAN 250
SOFT.....	250 TO 500
MEDIUM.....	500 TO 1000
STIFF.....	1000 TO 2000
VERY STIFF.....	2000 TO 4000
HARD.....	GREATER THAN 4000

\* VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.

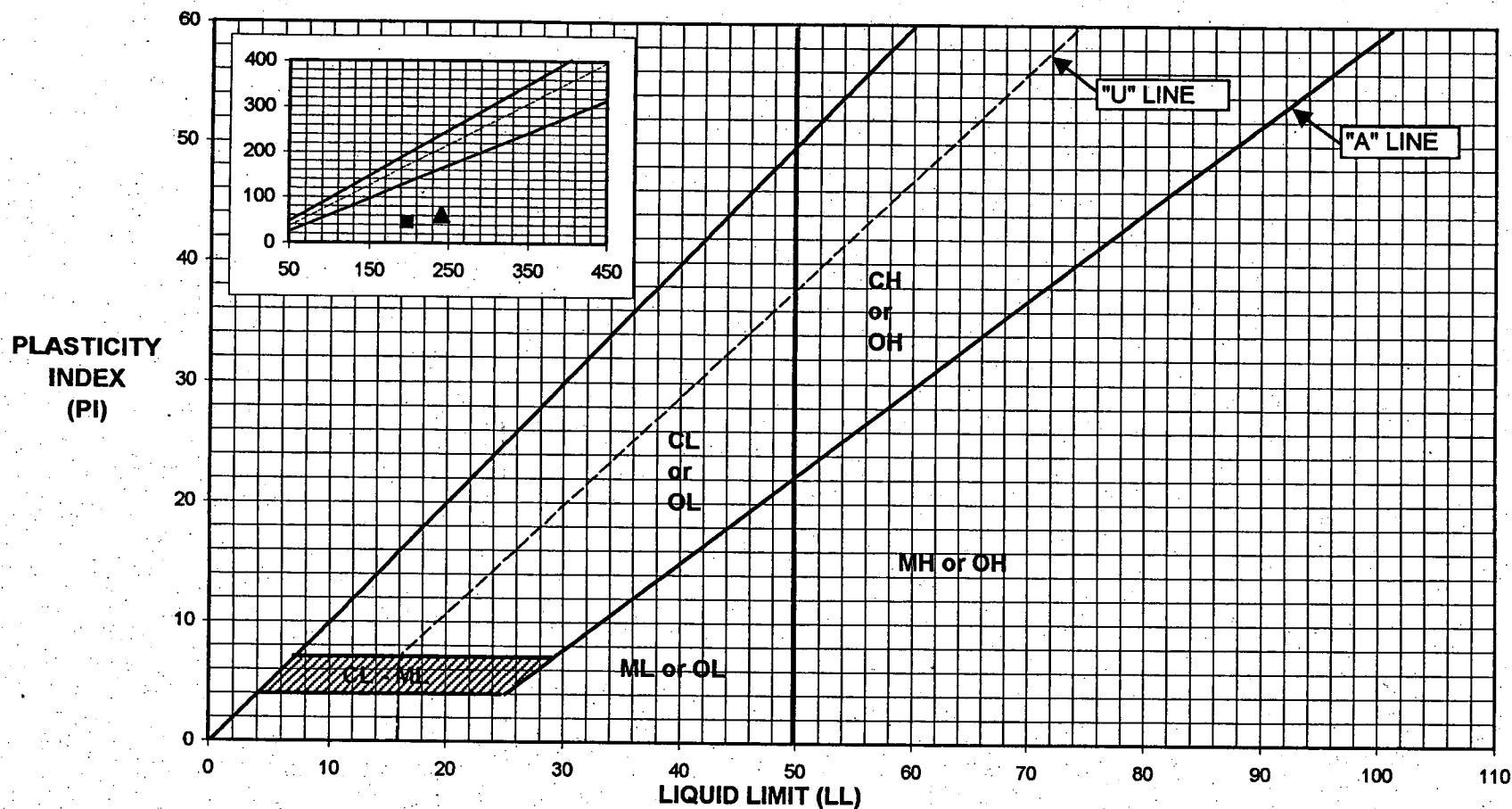
## UNIFIED SOIL CLASSIFICATION SYSTEM

### SOIL CLASSIFICATION CHART

PROJECT NO. 200054

DATE: 6/28/2000

## ATTERBERG LIMITS

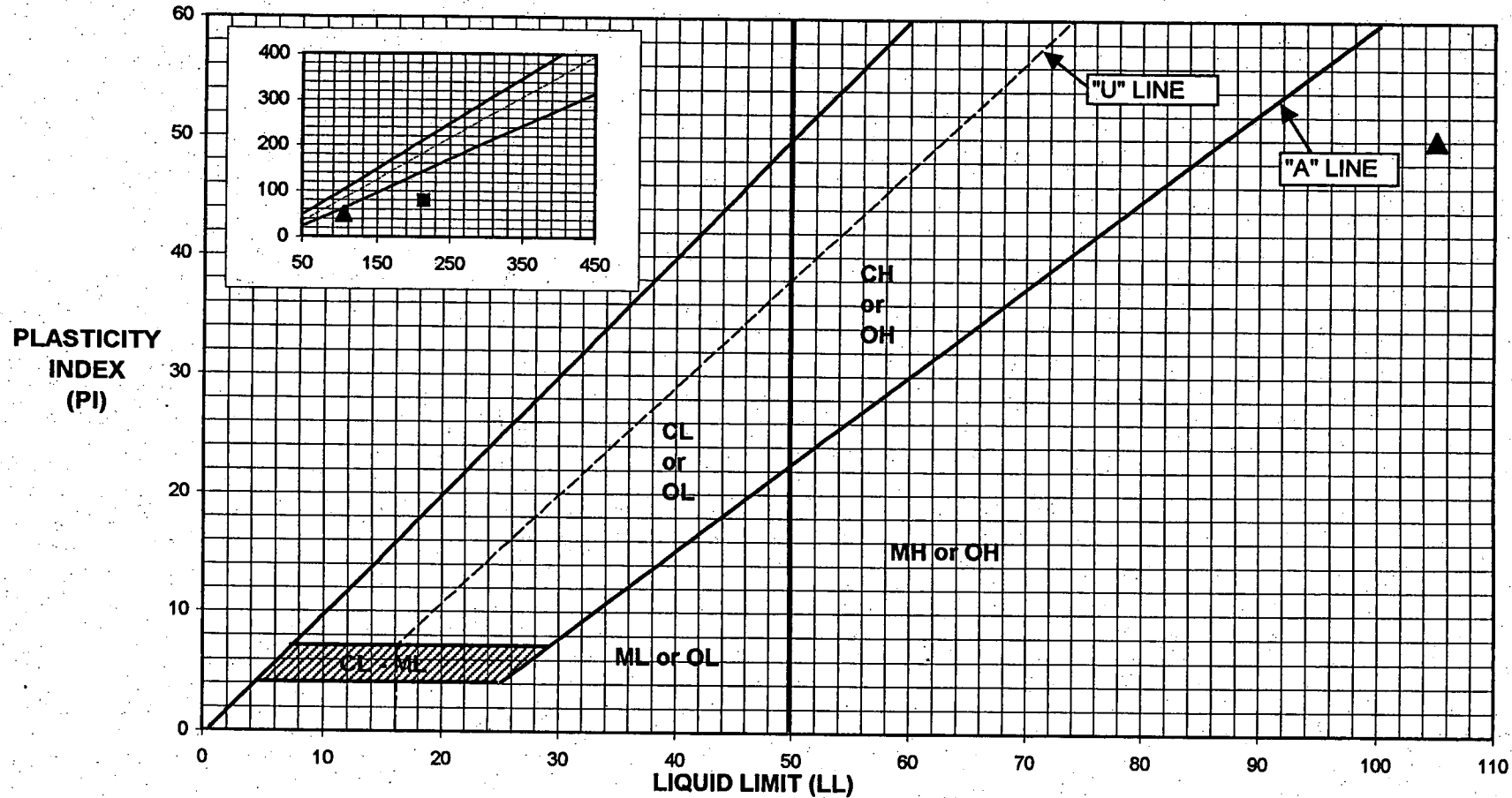


	LOCATION	SAMPLE	DEPTH		CLASSIFICATION	% MOISTURE	LL	PL	PI
■	B-222	S-9	25-27'	OH	DARK GRAY ORGANIC SILT WITH FIBERS	171	198	152	46
▲	B-207	S-7	15-17'	OH	DARK GRAY ORGANIC SILT WITH FIBERS	212	242	181	61

PROJECT NO. 200054

DATE: 6/28/2000

# ATTERBERG LIMITS

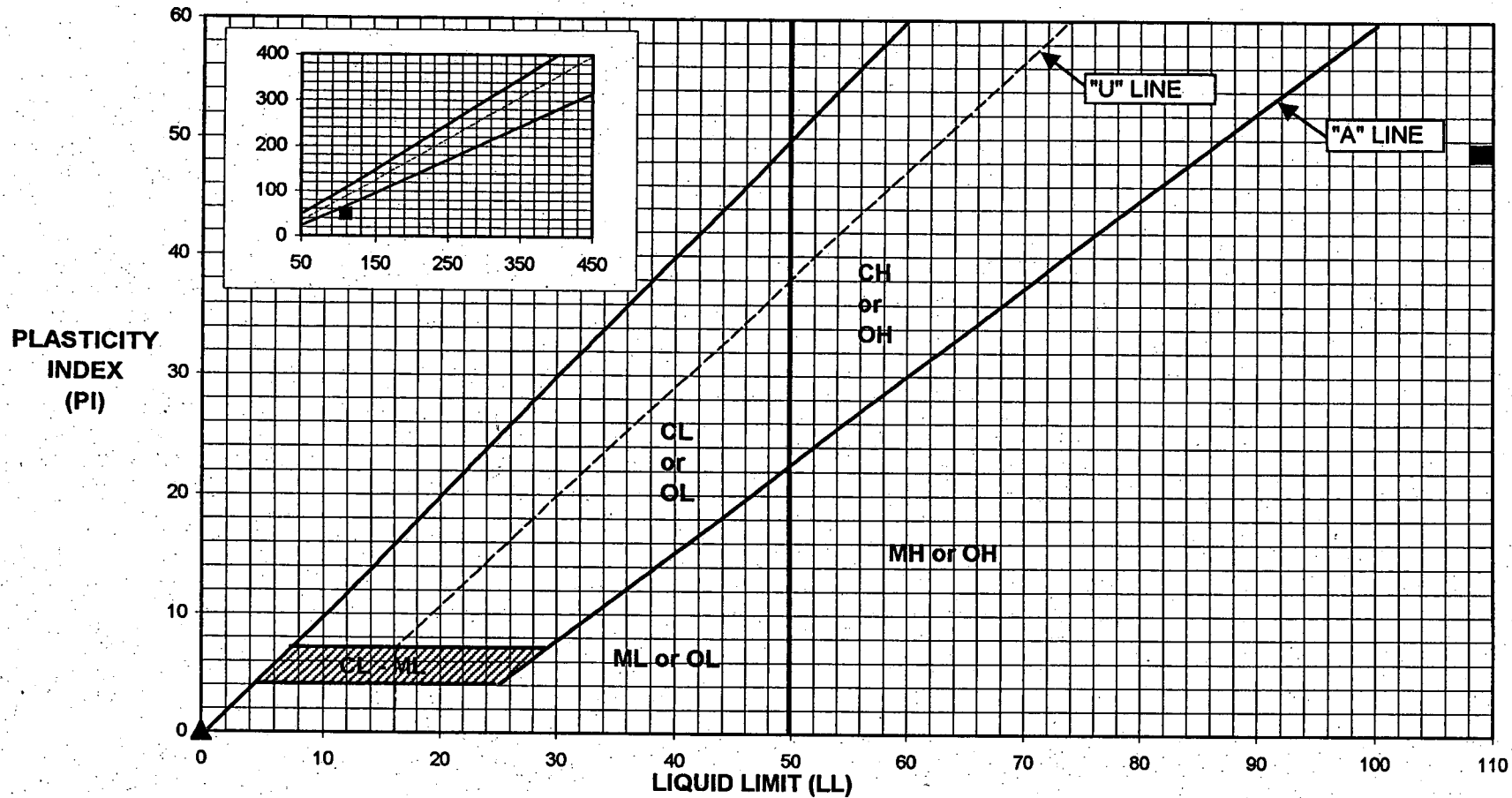


	LOCATION	SAMPLE	DEPTH		CLASSIFICATION	% MOISTURE	LL	PL	PI
■	B-219	S-7	20-22'	OH	BLACK ORGAINC SILT	192	214	134	80
▲	B-211	S-8	15-17'	OH	DARK GRAY ORGANIC SILT	69	105	55	50

PROJECT NO. 200054

DATE: 6/28/2000

## ATTERBERG LIMITS



	LOCATION	SAMPLE	DEPTH		CLASSIFICATION	% MOISTURE	LL	PL	PI
■	B-227	S-9	30-32'	OH	DARK GRAY ORGANIC SILT	89	109	60	49
▲									

## APPENDIX

## **APPENDIX** **LIMITATIONS**

### **A. SUBSURFACE INFORMATION**

Locations: The locations of the explorations were determined by tape measurement from existing site features. Elevations of the explorations were not determined for this study. The locations of the explorations should be considered accurate only to the degree implied by the method used.

Interface of Strata: The stratification lines shown on the individual logs of the subsurface explorations represent the approximate boundary between soil types, and the transition may be gradual. The stratum lines shown on soil profiles are based upon interpolation between explorations and may not represent actual subsurface conditions.

Field Logs/Final Logs: A field log was prepared for each exploration by a member of our staff. The field log contains factual information and interpretation of the soil conditions between samples.

We must emphasize that our recommendations are based on the final logs and the information contained therein, and not on the field logs.

The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and tests of the field samples. The final logs are included in the engineering report.

Water Levels: Water level readings have been made in the explorations at times and under conditions stated on the individual logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors at the time measurements were made.

Pollution/Contamination: Unless specifically indicated to the contrary in this report, the scope of our services was limited only to investigation and evaluation of the geotechnical engineering aspects of the site conditions, and did not include any consideration of potential site pollution or contamination resulting from the presence of chemicals, metals, radioactive elements, etc. This report offers no facts or opinions related to potential pollution/contamination of the site.

Environmental Considerations: Unless specifically indicated to the contrary in this report, this report does not address environmental considerations which may affect the site development, e.g., wetlands determinations, flora and fauna, wildlife, etc. The conclusions and recommendations of this report are not intended to supersede any environmental conditions which should be reflected in the site planning.

**B. APPLICABILITY OF REPORT**

This report has been prepared in accordance with generally accepted soils and foundation engineering practices for the exclusive use of Bergen County for specific application to design of the Remediation of River Road. No other warranty, expressed or implied, is made.

**C. REINTERPRETATION OF RECOMMENDATIONS**

Change in Location or Nature of Facilities: In the event that any changes in the nature, design or location of the roadway are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

Changed Conditions During Construction: The analyses and recommendations submitted in this report are based in part upon the data obtained from 41 widely-spaced test boring performed for this study. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

Changes in State-of-the-Art: The conclusions and recommendations contained in this report are based upon the applicable standards of our profession at the time this report was prepared.

Use of Report by Prospective Bidders: This soil and foundation engineering report was prepared for the project by the **PMK Group** for design purposes only, and may not be sufficient to prepare an accurate bid. Contractors utilizing the information in the report should do so with the expressed understanding that its scope is limited to design considerations. Prospective bidders should obtain the owner's permission to perform whatever additional explorations or data gathering they deem necessary to prepare their bid accurately.

Construction Observation: We recommend that the **PMK Group** be retained to provide on-site soils engineering services during the earthwork construction and foundation phases of the work. This is to observe compliance with the design concepts and to allow changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.